

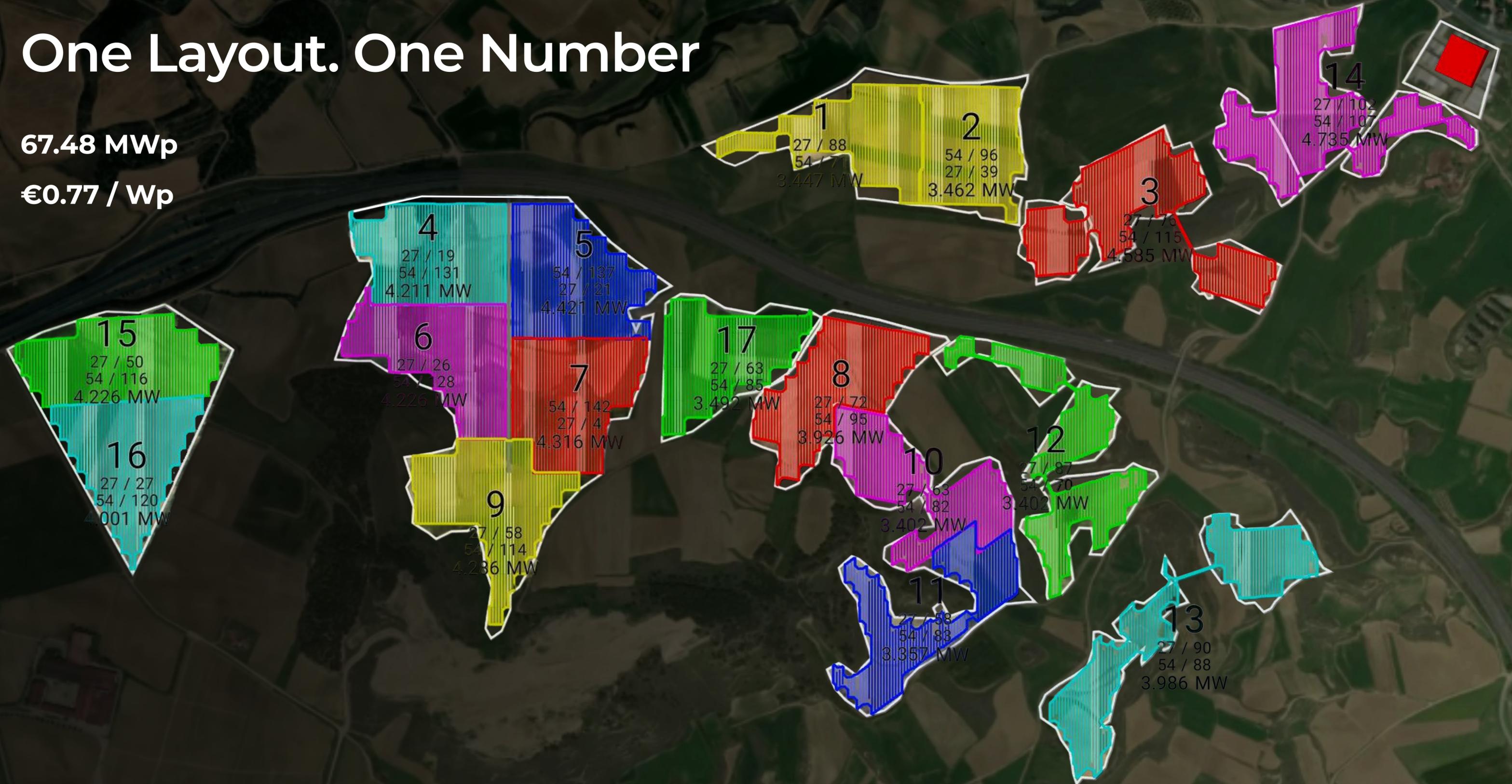
# The Cost Map: Hidden Overlaps Where PV Costs Accumulate



# One Layout. One Number

67.48 MWp

€0.77 / Wp



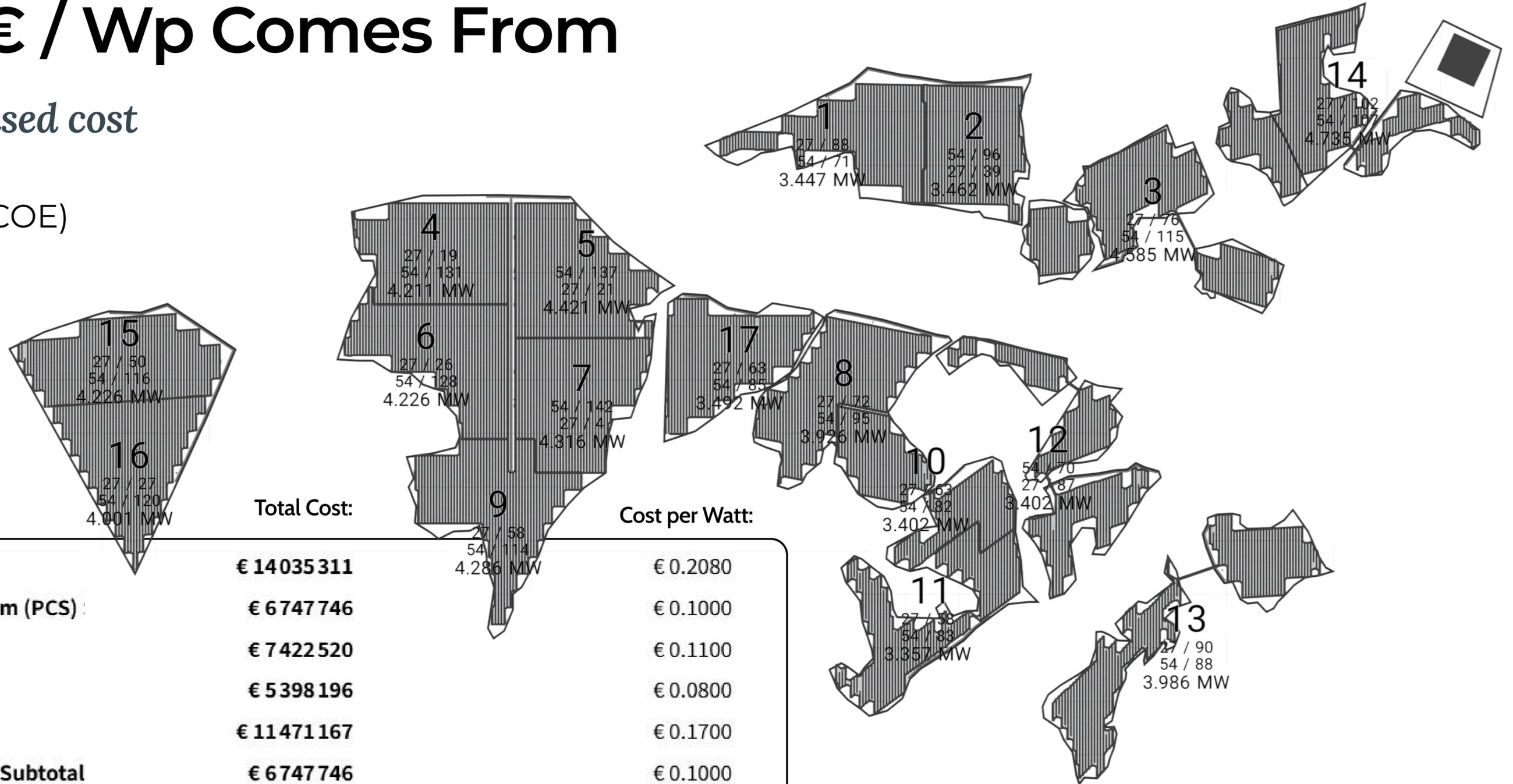
# Where € / Wp Comes From

## Benchmark-based cost

€44.3 / MWh (LCOE)

€51.8M Total

€0.77 / Wp



Total Cost:

Cost per Watt:

PV Modules Subtotal	€ 14 035 311	€ 0.2080
Power Conversion System (PCS)	€ 6 747 746	€ 0.1000
Electrical Subtotal	€ 7 422 520	€ 0.1100
Civil Subtotal	€ 5 398 196	€ 0.0800
Structural Subtotal	€ 11 471 167	€ 0.1700
Design and Engineering Subtotal	€ 6 747 746	€ 0.1000
Permitting	€ 674 775	€ 0.0100
Taxes	€ 2 699 098	€ 0.0400
Overhead & Margin	€ 2 699 098	€ 0.0400

# Replace Benchmarks with Quantities

A detailed cost model

€42.3 / MWh (LCOE)

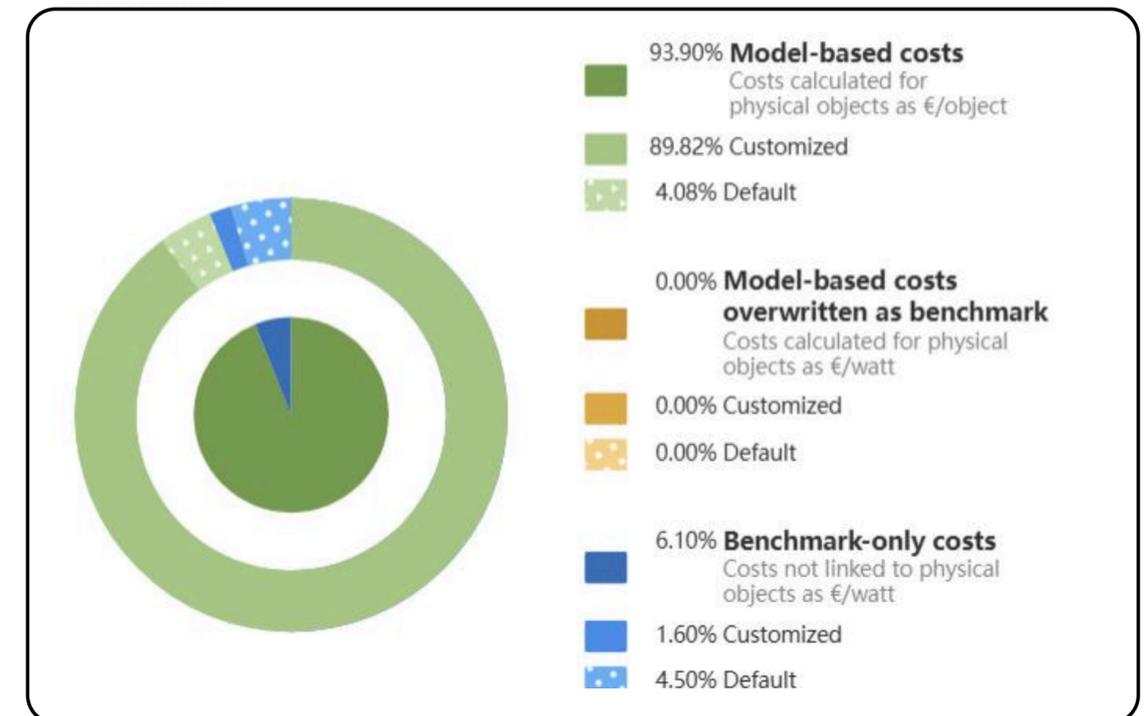
€54.2M Total

€0.80 / Wp



Description	Cost Source	Cost state	Cost Unit	Quantity	Labor hours per Unit	Loaded wage Rate	Labor cost per Unit	Material cost per Unit	Labor Total	Material Total	Total Cost	Cost Per Watt
<b>Low Voltage Elect Cable</b>												
DC												
<b>Extender</b>												
16 copper		Customised	€/m	386312.6389 m			€ 1.6000	€ 3.6000	€ 618.100	€ 1390726	€ 2008826	€ 0.0298
<b>Whip</b>												
16 copper		Customised	€/m	139981.3853 m			€ 1.2000	€ 3.6000	€ 167978	€ 503933	€ 671911	€ 0.0100
6 copper		Customised	€/m	10676.7340 m			€ 1.1000	€ 1.6000	€ 11744	€ 17083	€ 28827	€ 0.0004
<b>MultiHarness</b>												
16 copper		Customised	€/m	90766.4138 m			€ 1.2000	€ 3.6000	€ 108920	€ 326759	€ 435679	€ 0.0065
4 copper		Customised	€/m	14761.6982 m			€ 1.0500	€ 1.1000	€ 15500	€ 16238	€ 31738	€ 0.0005
AC												
<b>AcFeeder</b>												
800 aluminum		Customised	€/m	82216.7474 m			€ 6.0000	€ 24.0000	€ 493300	€ 1973202	€ 2466502	€ 0.0366
630 aluminum		Customised	€/m	9016.9871 m			€ 5.0000	€ 19.0000	€ 45085	€ 171323	€ 216408	€ 0.0032
Misc.	Benchmark	Default	€/lump sum	1.0000							€ 0.0000	€ 0.0000

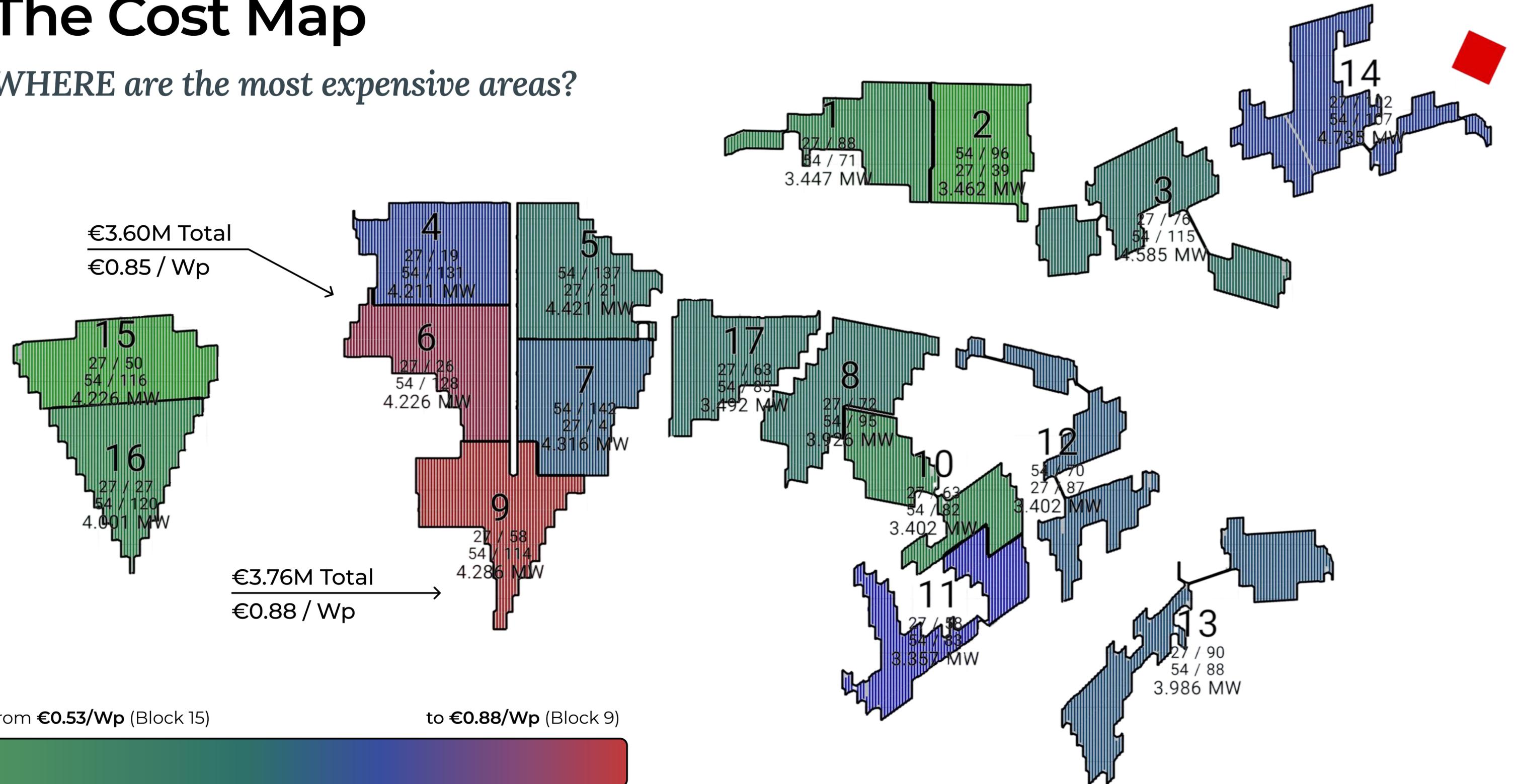
Cost Source:



Description	Cost Source	LCOE Input	First year	30 Years net
<b>Economics</b>				
Project lifecycle		30 Years		
<b>NPV of Cost</b>				
Initial Investment in Capital Cost		€ 6.27m		€ 124.20m
Capital Cost, total	€ 48.11m × 20 %			
<b>Debt Cost</b>				
Principal Debt	€ 4.48m			€ 56.39m
Capital Cost, total	€ 48.11m × 80 %			
Debt Term	15 Years			
Interest Rate on Term Debt	5 %			
Lender's Fee	€ 769.81k			€ 769.81k
Debt size	€ 38.49m × 2 %			
<b>Operating Costs</b>				
Operating and Maintenance	€ 1.92m			€ 107.55m
Project metrics, DC Total	67.5 MW × 0.009 \$/W/year			€ 607.30k
General & Administrative	€ 134.95k			€ 7.57m
Project metrics, DC Total	67.5 MW × 0.002 \$/W/year			
Insurance	€ 240.57k			€ 13.49m
Capital Cost, Total	€ 48.11m × 0.5 %/year			
Property Tax	€ 408.96k			€ 22.94m
Capital Cost, Total	€ 48.11m × 0.85 %/year			
All include zones only	701.1035 ac			
Land Lease	€ 525.83k			€ 29.49m
750 \$/ac/year				
Discount Rate, applied each year	2 %			
Operation Growth Rate, each year	4 %/year			
<b>NPV of Energy Production</b>				
Simplified Energy Production	145.8 GWh			3163.7 GWh
Energy, First year Total	148.7 GWh × 30 Years		148.7 GWh	4462.3 GWh
Production Degradation, applied fro...	-249.4 GWh			
148.7 GWh × 0.4 %				
Discount Rate, applied each year	2.9 GWh			1049.2 GWh
148.7 GWh × 2 %				
<b>Levelised Cost of Energy (LCOE)</b>		€ 133.83m / 3163.7 GWh		<b>€ 42.30/MWh</b>

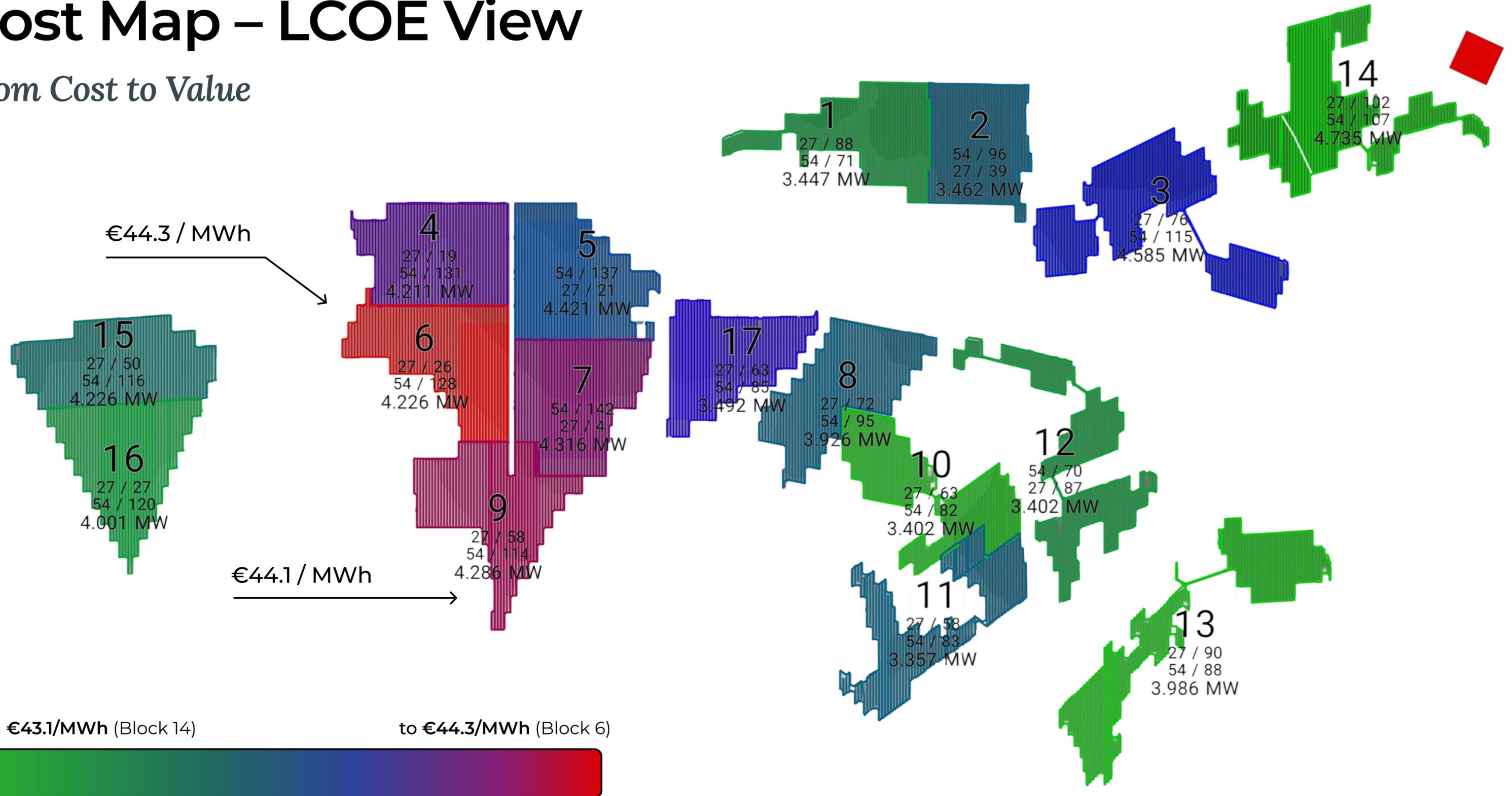
# The Cost Map

WHERE are the most expensive areas?



# Cost Map – LCOE View

From Cost to Value



from €43.1/MWh (Block 14)

to €44.3/MWh (Block 6)



# Cross-Disciplinary View

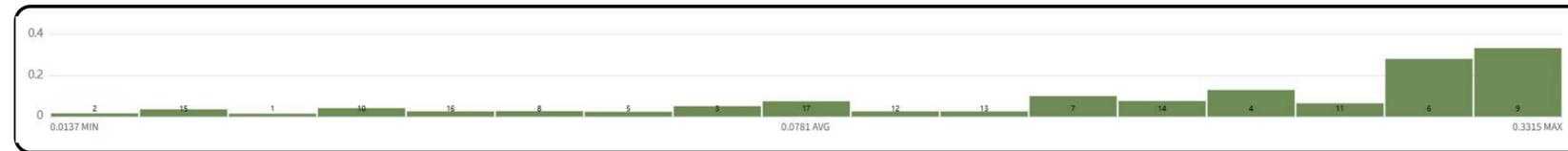
WHAT is driving cost there?



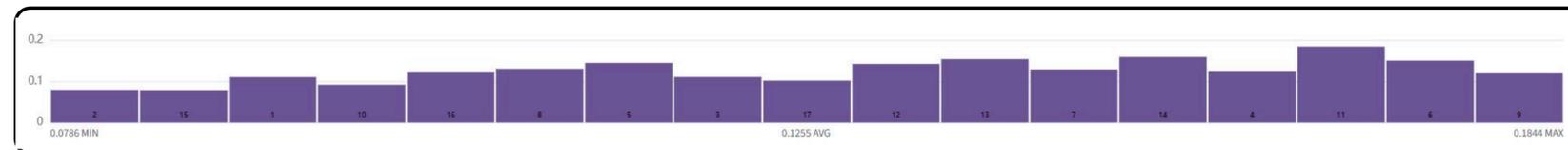
Structural:



Civil:

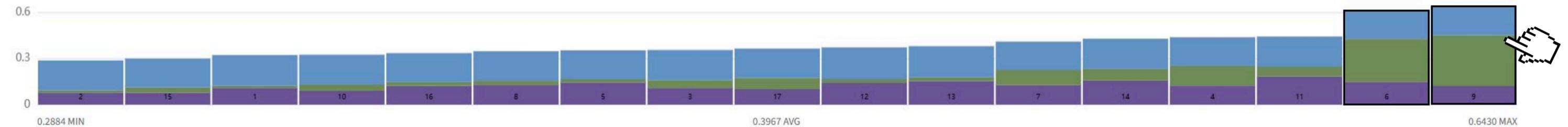


Electrical:



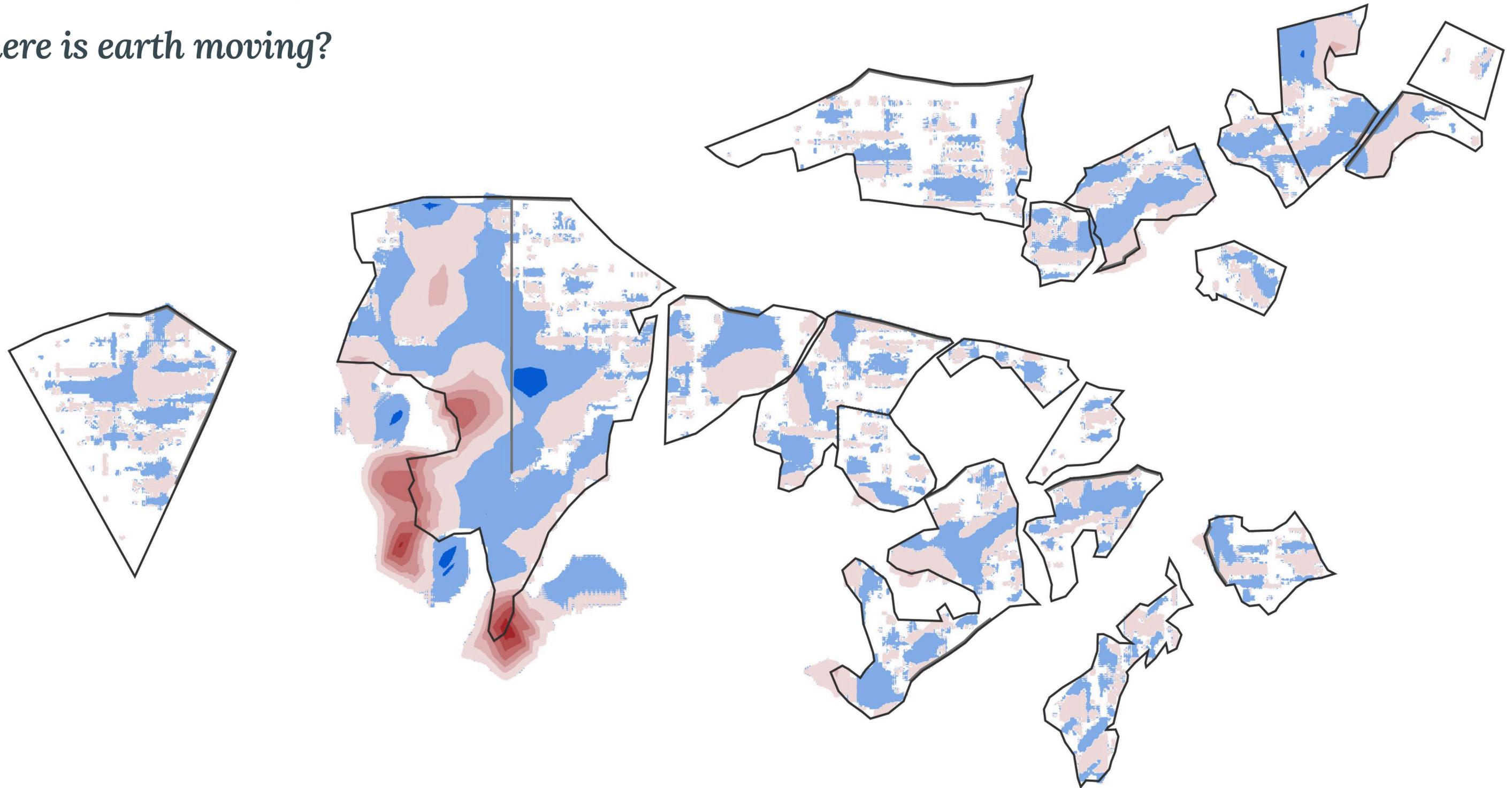
Structural: €/W 0.1861  
 Civil: €/W 0.2792  
 Electrical: €/W 0.1501  
 Total: €/W 0.6154  
 Block: 6

Structural: €/W 0.1900  
 Civil: €/W 0.3315  
 Electrical: €/W 0.1215  
 Total: €/W 0.6430  
 Block: 9



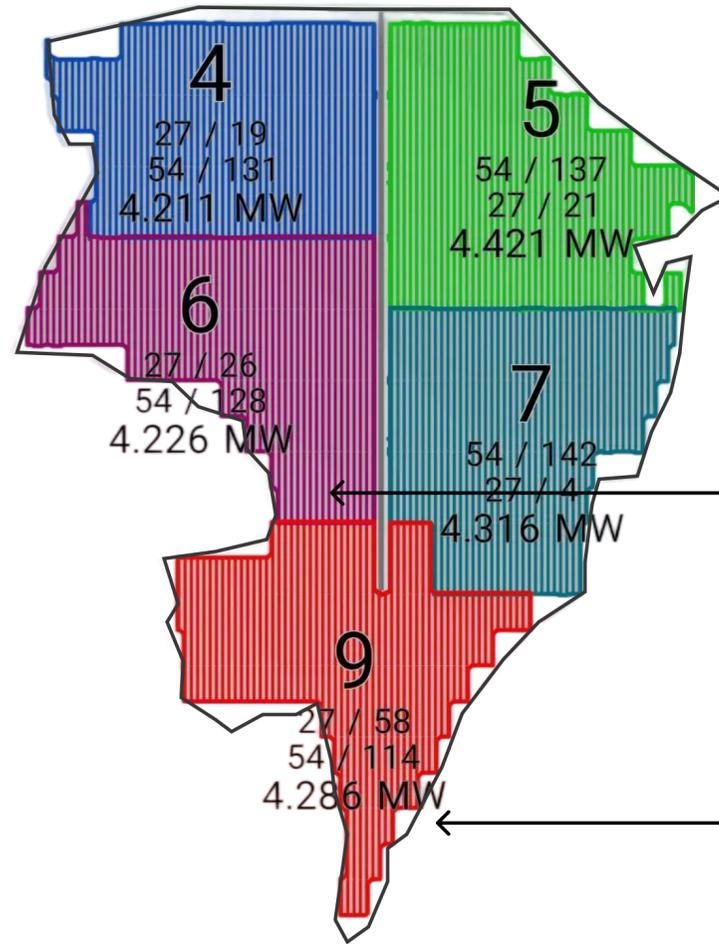
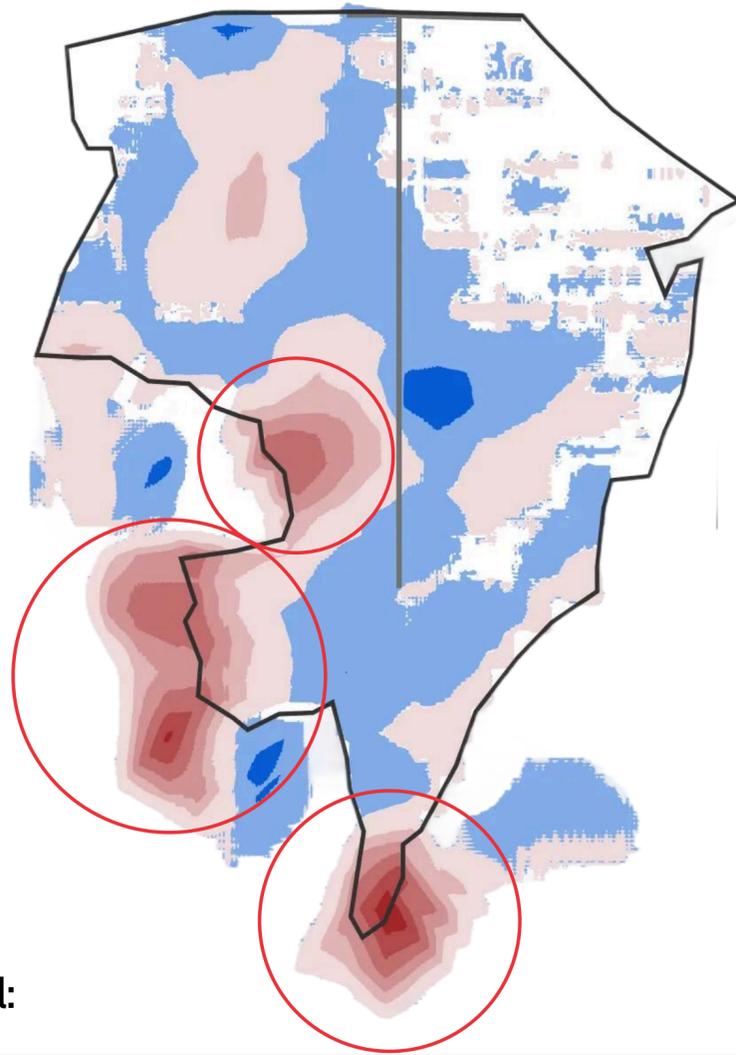
# Civil Grading Heatmap

*Where is earth moving?*



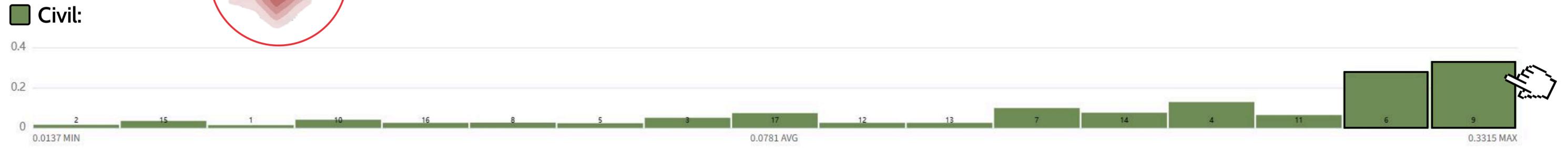
# Granular Civil Cost Map

WHY is Civil expensive in these blocks?



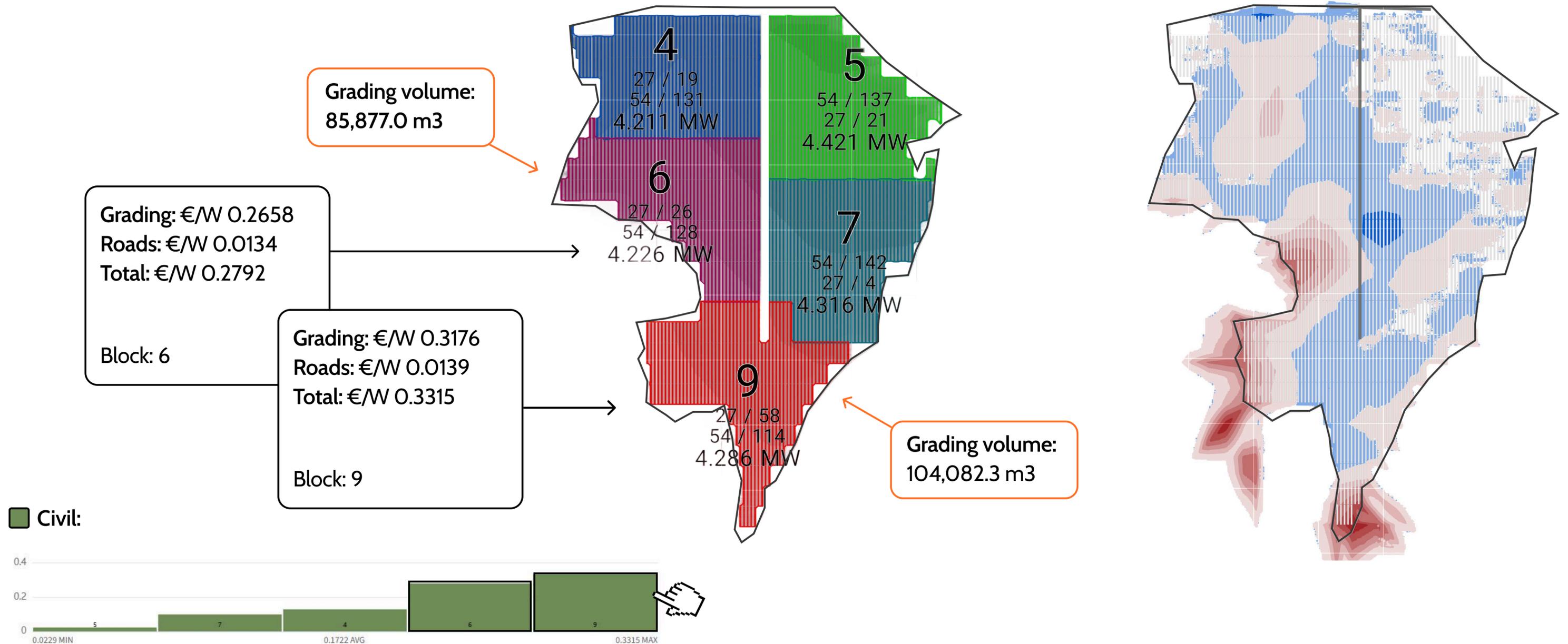
Grading: €/W 0.2658  
 Roads: €/W 0.0134  
 Total: €/W 0.2792  
 Block: 6

Grading: €/W 0.3176  
 Roads: €/W 0.0139  
 Total: €/W 0.3315  
 Block: 9



# Earthwork Sensitivity: Grading Window 0.3 m

Baseline constraint

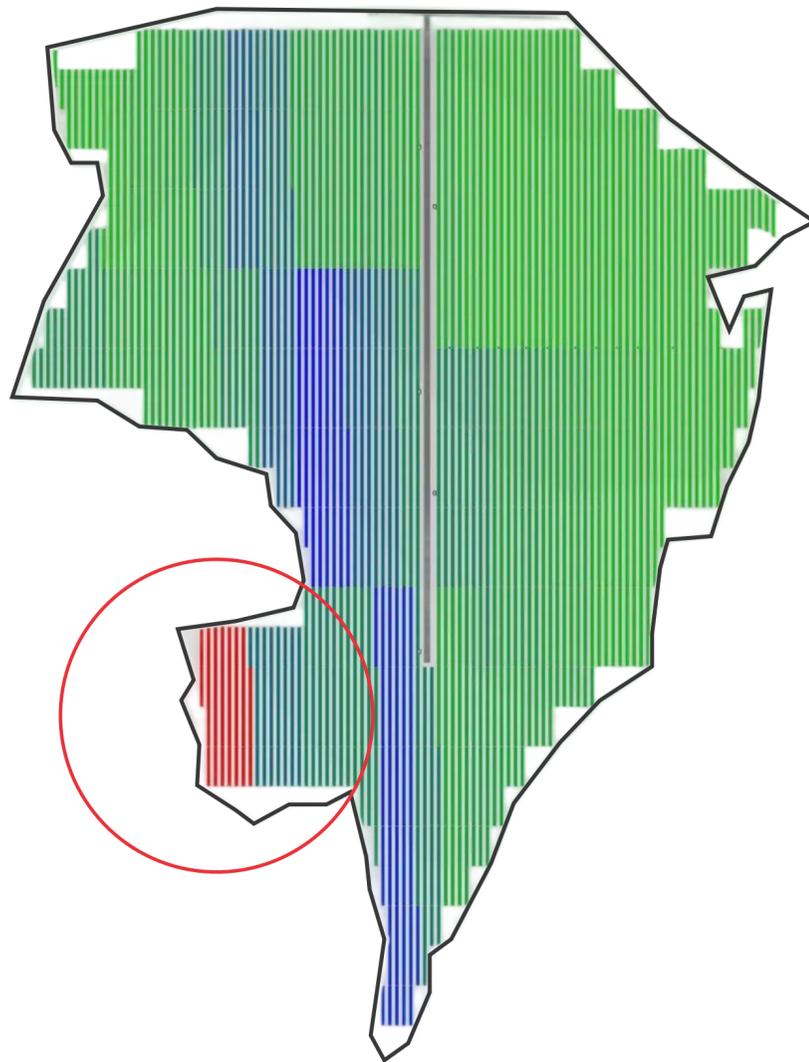




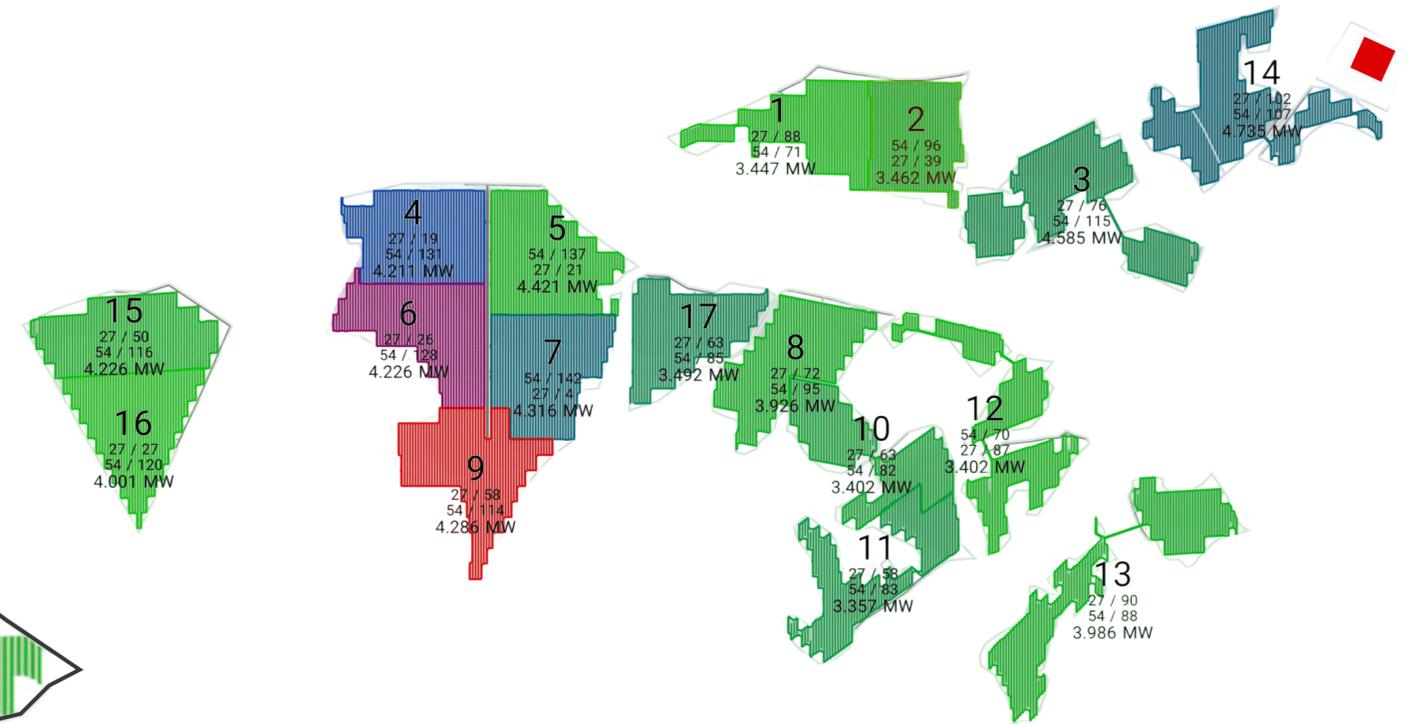
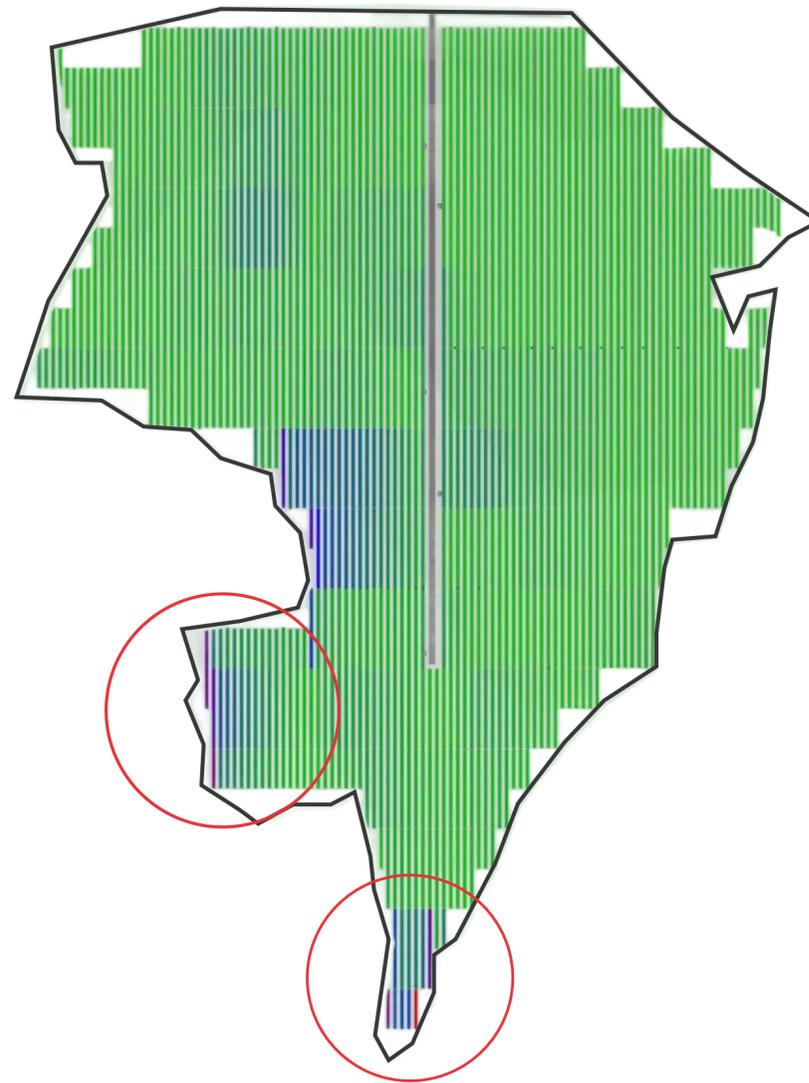
# LOD: Cost Granularity

Cost distribution down to the table level

CBX/LBD Groups Cost Map:

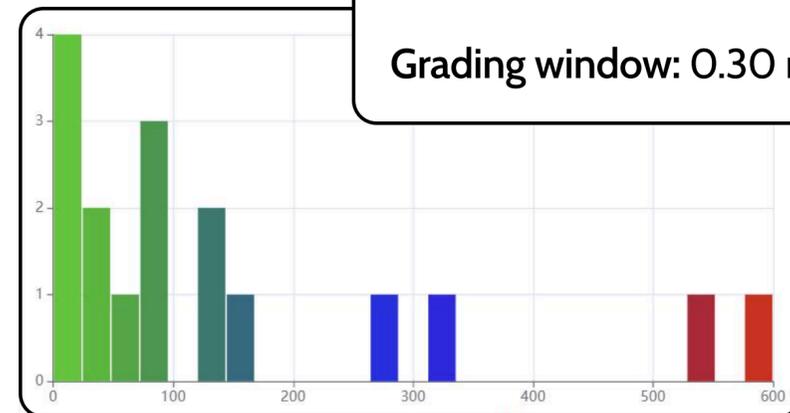


Trackers Cost Map:



Installation Slope: 10.0%  
North facing slopes: 10.0%  
South facing slopes: 10.0%  
East-West: 10.0%

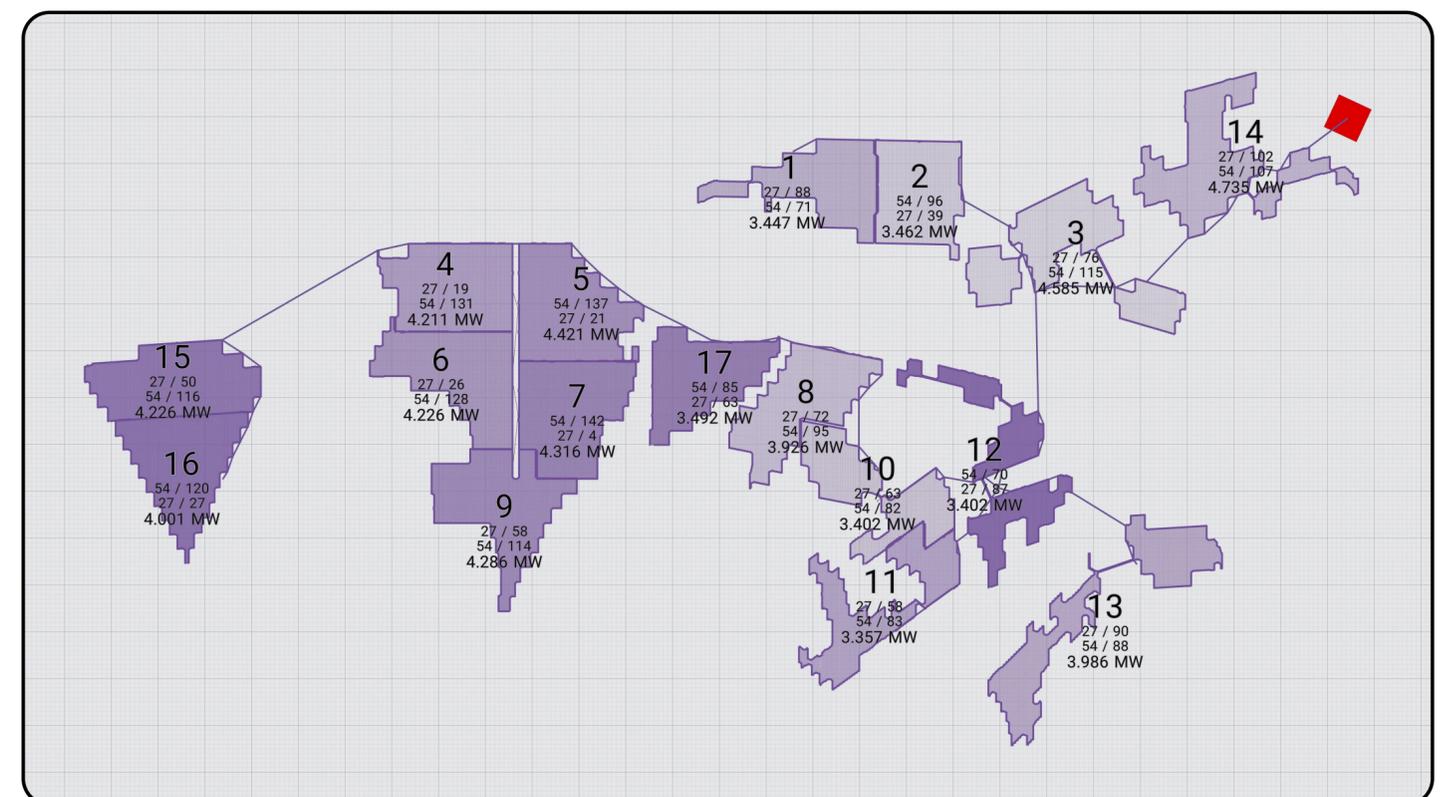
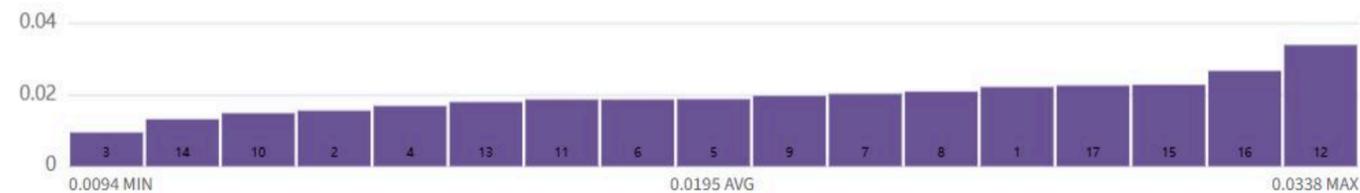
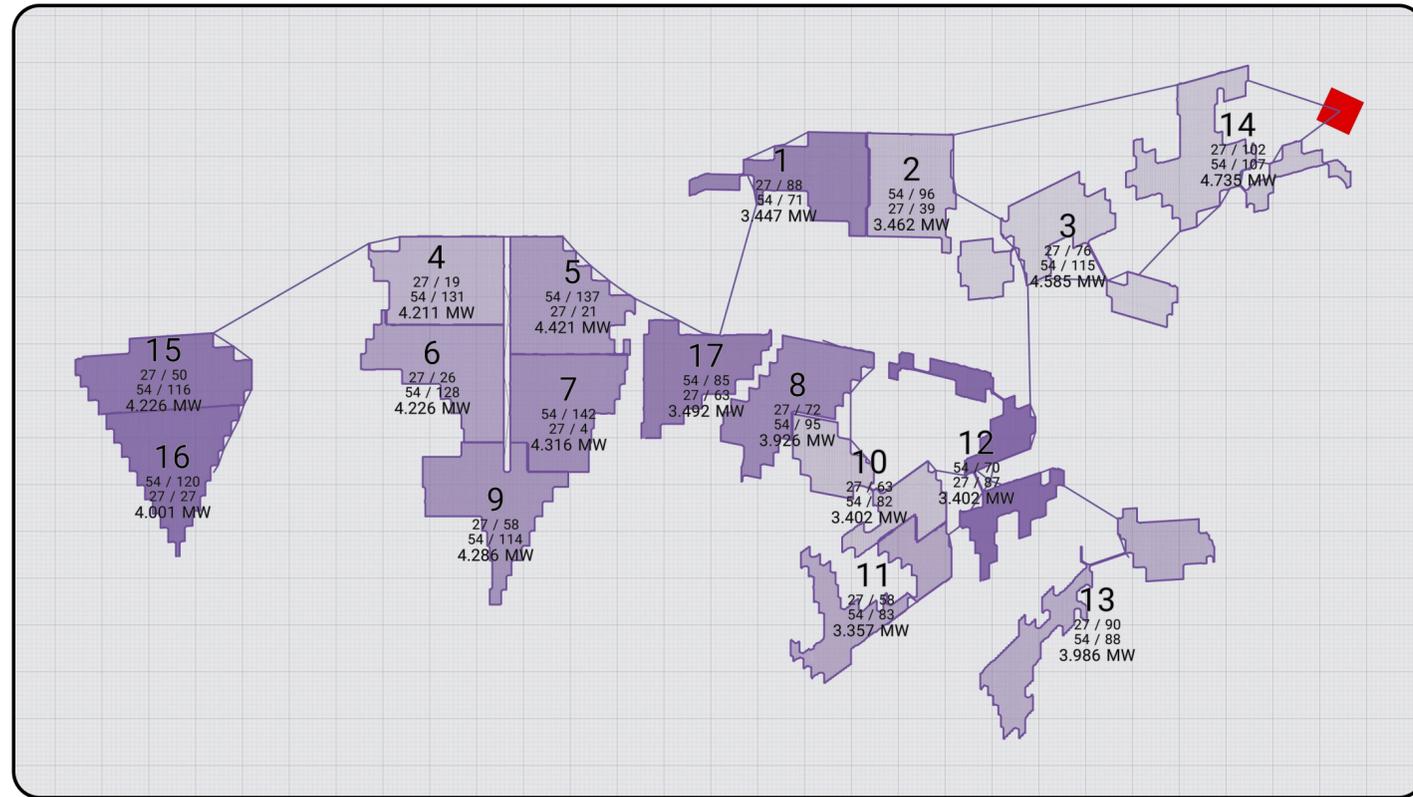
Grading window: 0.30 m



# Granular Electrical MV Cost Map

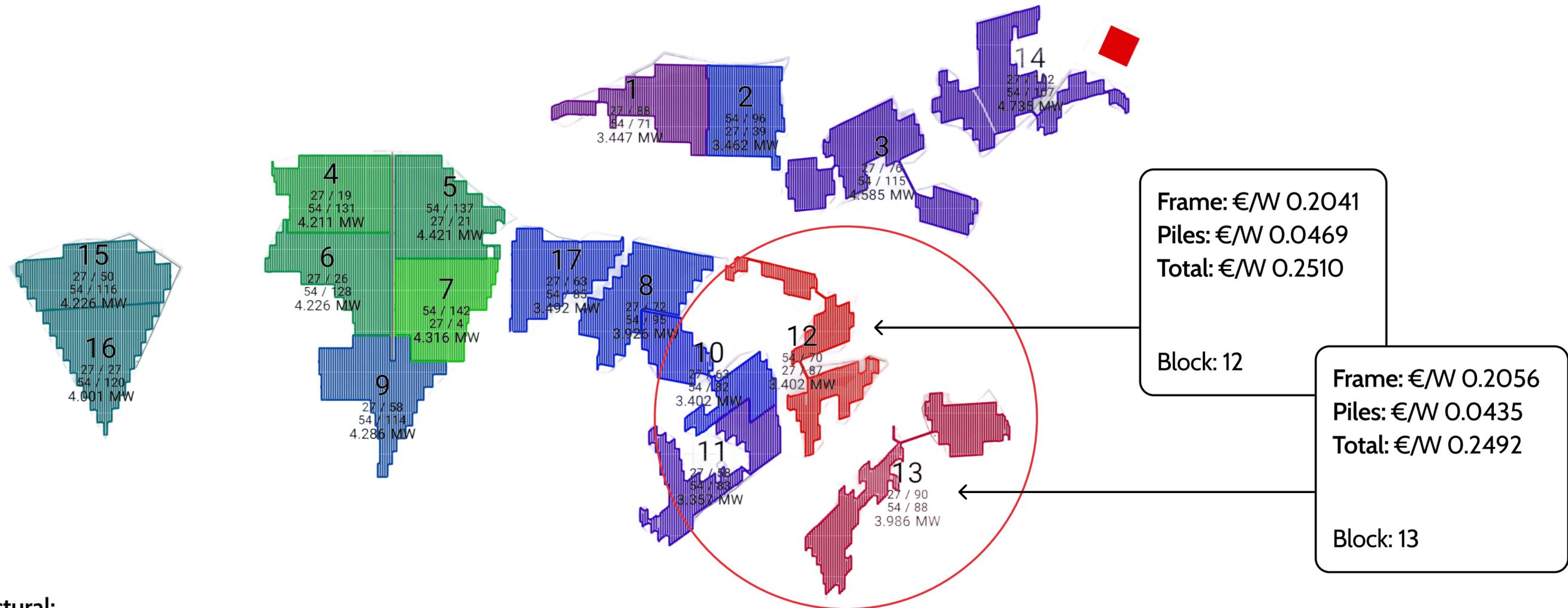
WHY and HOW Electrical changes

Electrical €/W increased by 6.7%

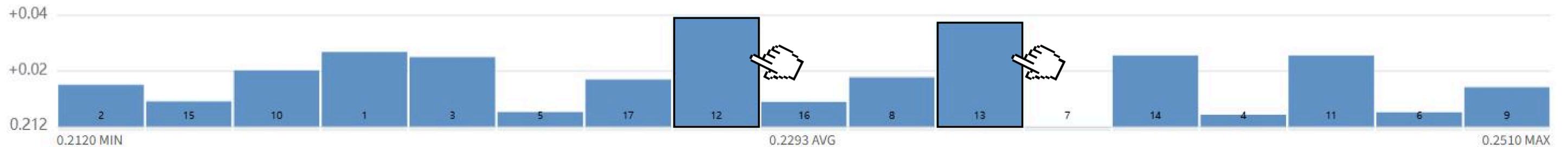


# Granular Structural Cost Map

WHY Structural differs block to block



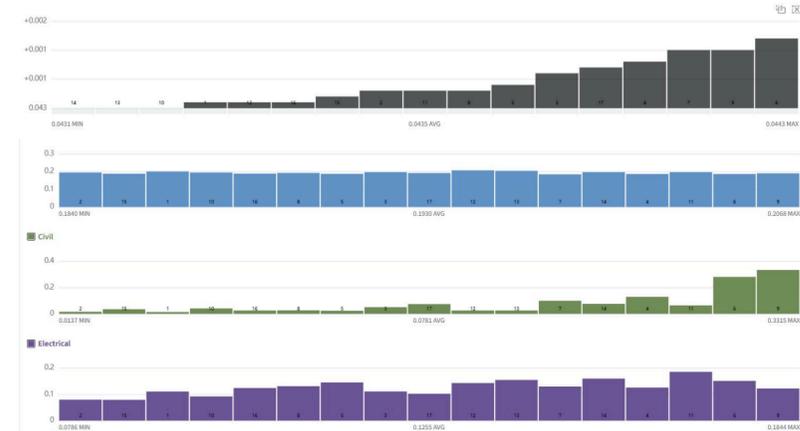
Structural:



€/W



# Cost Map



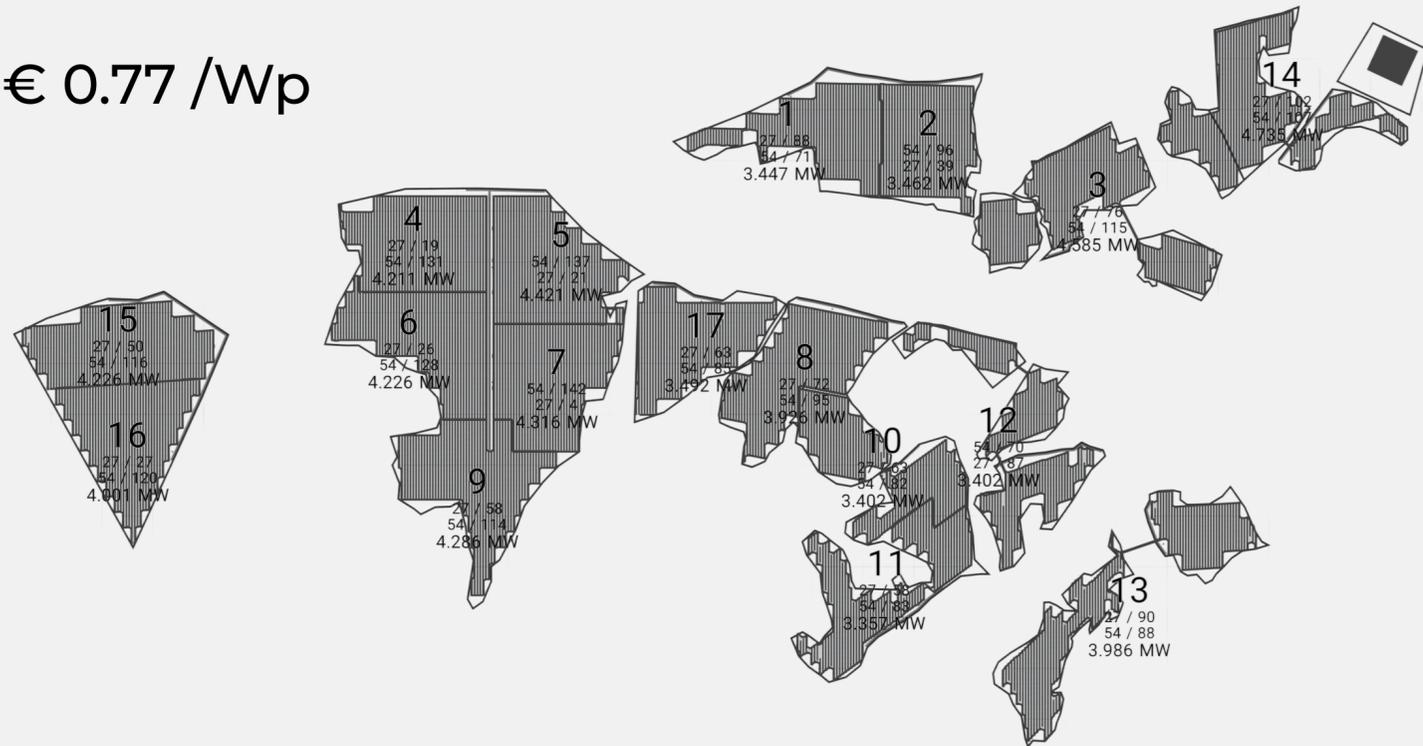
LCOE € 43.5/MWh (avg)

Structural Cost per Block:  
€ 0.19/Wp (avg)

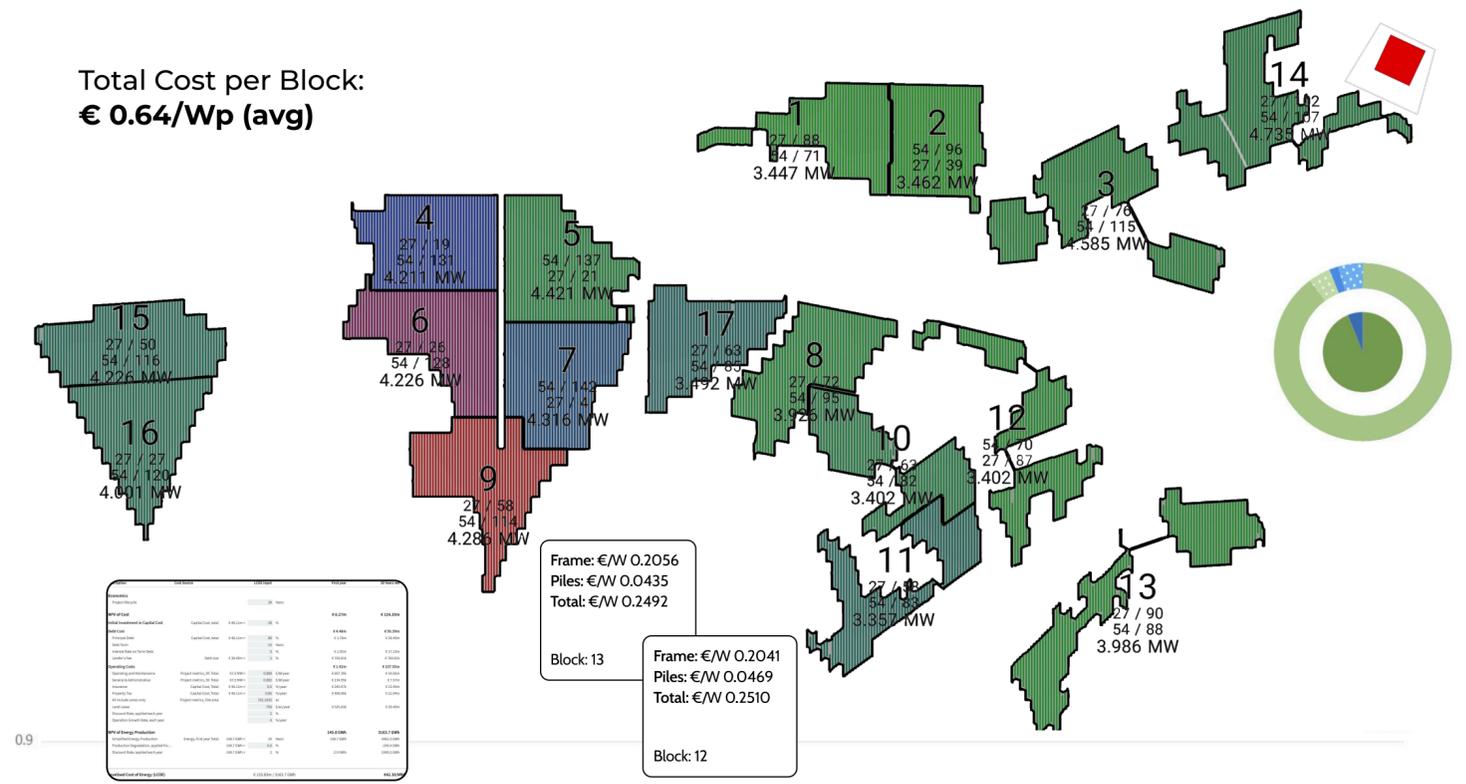
Civil Cost per Block:  
€ 0.08/Wp (avg)

Electrical Cost per Block:  
€ 0.13/Wp (avg)

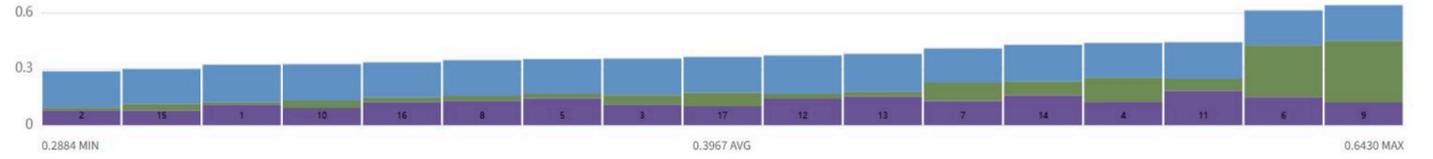
€ 0.77 /Wp



Total Cost per Block:  
€ 0.64/Wp (avg)



Block	Frame (€/W)	Piles (€/W)	Total (€/W)
Block 13	0.2056	0.0435	0.2492
Block 12	0.2041	0.0469	0.2510



# The Cost Map → True Optimisation

It's about decision maturity.

- Global = visibility
- Cross-disciplinary = prioritisation
- Granular = optimisation

Level	Question	Actions we take
<b>Global</b>	<b>WHERE</b> are the most expensive areas?	Keep / avoid zones, shift boundaries, choose where we are willing to “pay”
<b>Cross-Disciplinary</b>	<b>WHAT</b> is driving the cost there (civil / electrical / structural)?	Focus the team on the cost-leading discipline, pick the main lever to pull first
<b>Granular</b>	<b>WHY</b> is it expensive, and <b>HOW</b> do we optimise for it?	Tune parameters (spacing, grading strategy, pile lengths, combiner sizing/grouping, cable sizing, routing)



# Thank you!

*Any questions?*

